

REMARKS**Objections to the Drawings**

The drawings have been objected to under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims. The Applicants respectfully disagree. However, to further the prosecution of this application, Figs. 26 and 28 have been amended and new Fig. 28b has been added. No new matter has been added.

With respect to Claim 109, illustrated in Fig. 26, are two sensors 272 attached to the test substrate at both ends of a fastener.

With respect to Claims 171 and 174, Figs. 28 and 28b illustrate a pair of sensor arrays around fasteners. These sensor arrays have sense elements at different radial positions, as shown, for example, in Fig. 27a.

With respect to Claim 172, Fig. 24a illustrates sense elements at different circumferential positions for a circular sensor array and Fig. 26 illustrates a sensor array mounted around a fastener.

With respect to Claim 112, Fig. 28 illustrates a single cable for connecting the sensor arrays to instrumentation through electronics 103.

With respect to Claims 161 and 118, the new Fig. 28b illustrates drive conductors connected together.

With respect to Claim 115, Figs. 32 and 33 and associated description at page 37, lines 9-28 illustrate the use of pairs of sense coils connected together to provide a differential measurement.

With respect to Claim 116, Fig. 28 illustrates the drive and sense element connectors so that the separate drive connections to each sensor are apparent.

With respect to Claims 117 and 119, Fig. 22 illustrates an exemplary sensor array in which all of the sense elements 18 are connected together to form a common output signal. Figs. 27a and 28 illustrate circular sensor arrays around fasteners.

With respect to Claim 145, Fig. 26 illustrates a sensor array mounted under the head of a fastener.

With respect to Claim 160, Figs. 24a and 27a illustrate circular spatially periodic field eddy current sensors and Fig. 26 illustrates a sensor array mounted under the head of the fastener.

With respect to Claim 188, Figs. 9 and 10 and associated description at page 22, line 1 through page 23, line 9, illustrate test coupons for fatigue testing. Alternative designs for test specimens are shown in Figs. 18-20 and are discussed on page 27, line 19 through page 28, line 8. Figs. 25 and 26 illustrate a fastener fastened through the test specimen.

With respect to Claim 163, Figs. 1, 22, 24a, and 27a all illustrate drive windings having conductors that are connected together so that the direction flow changes in a meandering pattern.

All features of the claimed invention have been illustrated in the drawings.

Objections to the Claims

Claim 109 has been objected to because it is unclear "how a test substrate responds to a magnetic field; what the test substrate is; how a test substrate structurally cooperates with the fastener." The Applicants respectfully disagree. However, to further the prosecution of this application, Claim 109 has been amended. The response of the test substrate to an imposed magnetic field is described in general in the Specification on page 2, lines 12-21 and also, for example, for some of the sensors of this application on page 16, line 13 through page 17, last line. In regards to the structural cooperation between the test substrate and the fastener, it is commonly understood by artisans skilled in the art that the fastener provides a mechanical joint between materials or components.

Claim 187 has been objected to because "it is unclear as to what kind of action is taken." The Applicants respectfully disagree. The kind of actions that may be taken are described in the Detailed Description section of the application (see page 23, lines 20-21; page 24, lines 7-26; page 25, lines 13-16). The action may be stopping fatiguing or ending of the fatigue test, and/or inspecting the material with another method such as, for example, a visual method, to confirm the initial indication.

Claim 188 has been objected to because it is unclear as to what a test coupon is. The Applicants respectfully disagree. However, to further the prosecution of this application, Claim 188 has been amended to recite "test specimen" instead of the "test coupon." The use of test

specimens is described throughout the present application (see page 22, line 1 through page 23, line 9; page 27, line 19 through page 28, line 8).

Claims 151, 156, 167, 169, 152, and 155 have been amended to overcome the Examiner's objections. All claims are now believed to be in condition for allowance.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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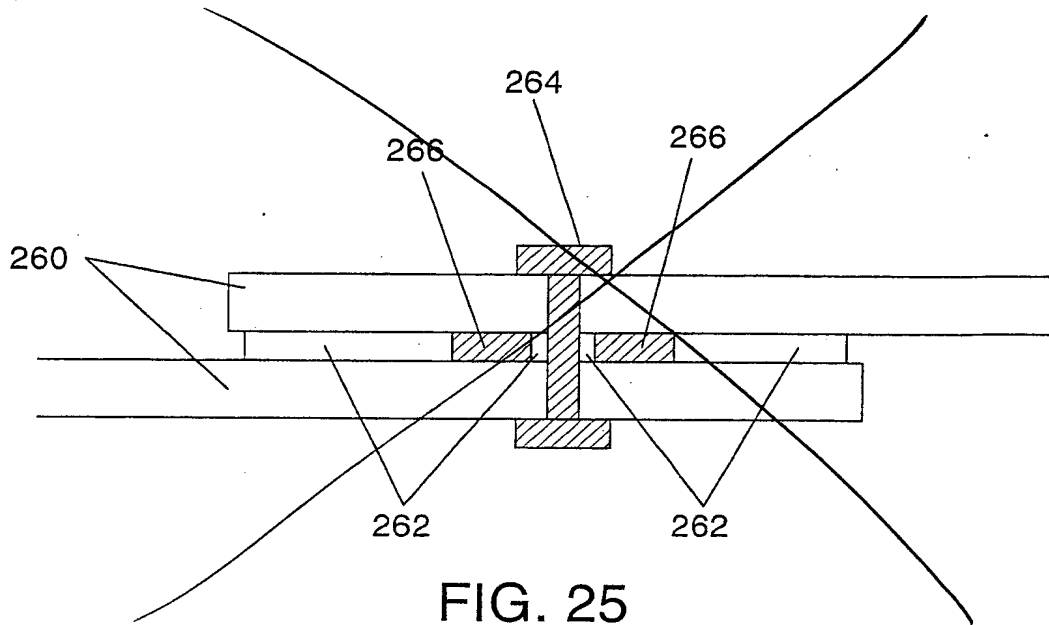


FIG. 25

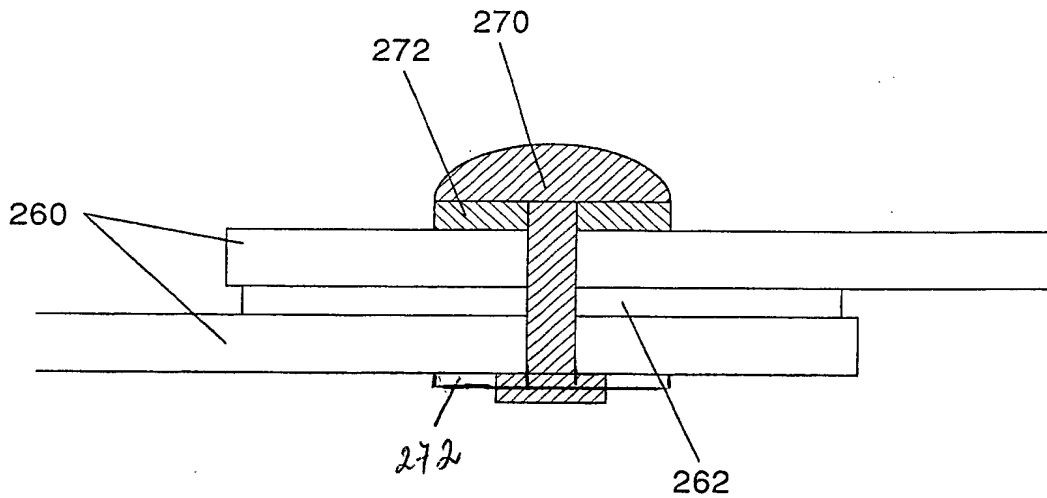


FIG. 26

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